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OC-12

Chief, Contract Administration Branch 26 April 1960

Chief, Termination & Settlement Branch

Contract No. RD-128, Task Order No. 6
with [redacted] 25X1

1. Attached for appropriate attention are three executed copies of Contractor's Release and Assignment on this case in the amount of $27,512.15, which is the approved settlement amount.

2. This case is now considered closed by Termination and Settlement Branch.

[redacted] 25X1

Distribution:
Orig - Addressee
1 - RD-128, TO#6 (Official)
1 - ICAD
1 - OC-E
1 - T&SB

OL/PD/T&SB [redacted] 25X1

DOC 8 REV DATE 19 MAR 1980 BY 064540
ORIG COMP 035 OPI 56 TYPE 02
ORIG CLASS S PAGES 1 REV CLASS C
JUST 22 NEXT REV 2010 AUTH: HR 70-2

SECRET

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Eng. 8-211

5 MAR 1958

Chief, Supplemental Programs Division, OC

Chief, Engineering Division, OC

High Gain Broadband Antenna

REF: SPM 8-544, SPM 7-708, SPM 8-515

1. In regard to the subject references, [redacted] has recently supplied a compromise proposal covering an antenna and pedestal assembly. This information was supplied to SPD representatives on 23 January 1958 through verbal discussions in order to expedite the consideration and handling of this project. 25X1

2. The proposal has been examined by this Division and is considered acceptable, especially in light of the fact that two other contractors have declined to attempt to produce the desired antenna in the 90 day period required. It is recommended therefore that the [redacted] proposal be accepted. 25X1

3. Your concurrence in the attached proposal is requested as soon as possible. Upon receipt of this concurrence every effort will be made to expedite the project.

[redacted] 25X1

Attachments:

[redacted] Proposal and Cost Analysis Sheet dated 28 February 1958 25X1

25X1

CONCUR:

[redacted]

Acting Chief, OC-SP

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Chief, Supplemental Programs Division, OC

Chief, Engineering Division, OC

High Gain Broadband Antenna

REF: SPM 8-544, SPM 7-708, SPM 8-515

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[redacted] 25X1

Attachments:

[redacted] Proposal and Cost Analysis Sheet dated 28 February 1958 25X1

OC-E/R+D-EP/LHG:mjr (4 March 1958)
cc: R+D Subject File
OC-E Chrono
R+D [redacted] 25X1
EP Chief, OC-SP

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ROUTING AND RECORD SHEET

SUBJECT: (Optional)

FROM: OC-SP/EA

NO. SPM 7-708

DATE 20 December 1957

TO: (Officer designation, room number, and building)	DATE RECEIVED	DATE FORWARDED	OFFICER'S INITIALS	COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)
1. OC-SP	23 Dec 57	26 Dec 57		1. For signature
2.				
3. OC-E				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

OB

ACTION

LFCS

FORM DEC 56 610 USE PREVIOUS EDITIONS ☑ SECRET ☐ CONFIDENTIAL ☐ INTERNAL USE ONLY ☐ UNCLASSIFIED

STANDARD FORM NO. 64

SECRET

Office Memorandum • UNITED STATES GOVERNMENT

SPM 7-708

TO : Chief, Engineering Division, OC

DATE: 20 December 1957

FROM : Chief, Supplemental Programs Division, OC

SUBJECT: High Gain-Broadband Antenna Requirement

25X1

1. The [redacted] has a requirement for a broadband-high gain antenna to be rotator mounted. High gain and broadband characteristics are not usually obtainable in one antenna, however, with some compromises we feel the following system can be produced to meet our requirements.

2. The following design parameters are established for your determination of a constructor:

A. 150 mcs to 1000 mcs with one feed.

B. Truncated paraboloid reflector not to exceed eight feet high by twenty feet wide.

C. A usable feed would probably be a logarithmic spiral. If a matching network is required for the fifty ohm receiver input, the network should be incorporated in the rotator control/indicator console.

D. Ease of detaching the antenna from the rotator should be a prime factor in building the mount. The antenna will be mounted only during the operating periods and removed when not in use.

E. The wind and temperature limits for this antenna should be patterned after the U. S. Navy shipboard standards.

3. We prefer to obtain a standard military type reflector and rotator with a contract being arranged for the assembly of the feed system and the rotator control and indicator console. Gain patterns are required as a means of determining the accuracy of the antenna beam throughout the desired band. The following list is the preferred patterns at the half power points.

150 mcs	11 DB	50 degrees
300	17	23
500	21	14
600	22	11
750	25	9
1000	27	7

..... Our requirement for.....

SECRET

Our requirement for this antenna necessitates a minimum of side lobes, but should this be impossible, the knowledge of their limited existence will be sufficient.

4. The assembly of this unique antenna should provide valuable information for future broadband antenna requirements.

25X1

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ROUTING AND RECORD SHEET

SUBJECT: (Optional)

FROM: OC-SP/EA Encl. #39

NO. SPM 8-544

DATE 7 February 1958

TO: (Officer designation, room number, and building)	DATE RECEIVED	DATE FORWARDED	OFFICER'S INITIALS	COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)
1. OC-SP		7/2		1. For signature
2. OC-E				
3. R&D		3/7		
4. EP				ACTION - ZIP
5.				
6.				
7.				
8.				
9.				
10.				
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12.				
13.				
14.				
15.				

FORM 1 DEC 56 610 USE PREVIOUS EDITIONS ☑ SECRET ☐ CONFIDENTIAL ☐ INTERNAL USE ONLY ☐ UNCLASSIFIED

Scanning antenna? No

Rotatable? Continuous

Rate of rotation? 2 rpm

Accuracy of positioning? ±1°

Automatic or manual control of position? Manual (?)

Automatic track No

Type signal? Receiving only

Remote indicators? Yes

Elevation? No

Change feeds? No (if VSWR can be maintained.)

Loading conditions, Ice? Snow? Yes

Shock & vibration? Normal ship vibrations.

Prefered reflector type? Expanded screen

Loading limits for operation? MIL spec

Paraboloid mandatory? Yes

VSWR limits? 3:1 QUALIFIED

E plane beam limits? ___ MINIMUM.

Acceptable limits of side lobes: Good

Front to Back ratio? Best possible

How detailed pattern analysis? Only where side lobes significant

Pattern analysis on site? No (?)

Power available for drive system? 115V. AC 60N.

Length of antenna from Rx? 35 feet.

Type of receiver? [redacted] 25X1

Can Rx be GFE for antenna test ~~No~~ YES.

Filters between Ant & Rx? NO.

Weight. 500 to 1000 lbs.
Antenna and Rotator.

Reflector should be as light as possible with fittings for rapid detachment.

Cube, Weight, and delivery date for establishing seashipment space.

When needed? Limit? 15 March 1958

Change needs ±	No, if VSWR can be maintained
VSWR?	3-1 nominal
E plane beam	
Side lobe limits?	6 db below main lobe
Front to back ratio	Best possible
How detailed pattern analysis	Only where side lobes significant
Power for drive	115 VAC 60W
Ant to Rx	35'
Type of Rx	
GFE	yes
~~Filter~~	
Weight	500-1000 lbs antenna, rotator, pedestal complete reflector as light as possible with fittings for rapid detachment

25X1

Cu' weight & delivery date needed for shipping space. Sea shippment

Scanning antenna? No

Rotatable? Continuous

Rate of rotation? 2 rpm

Accuracy of positioning? ±1°

Automatic or manual control of position? Manual (?)

Automatic track No

Type signal? Receiving only

Remote indicators? yes

Elevation? No

Change feeds? No

Loading conditions, Ice? Snow? yes

Shock & vibration? —

Prefered reflector type? Expanded screen

Loading limits for operation? MIL spec

Paraboloid mandatory? yes

VSWR limits? —

E plane beam limits? —

Acceptable limits of sine waves. ____

Front to Back ratio? ____

How detailed pattern analysis? ____

Pattern analysis on site? No (?)

Power available for drive system? ____

Length of antenna from Rx? ____

Type of receiver? xtal video

Can Rx be GFE for antenna test No

Filters between Ant & Rx? ____

Polarization

When needed? Limit? ____

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ROUTING AND RECORD SHEET

SUBJECT: (Optional)

FROM: OC-SP/EA

NO. SPM 8-515

DATE 17 January 1958

TO: (Officer designation, room number, and building)	DATE RECEIVED	DATE FORWARDED	OFFICER'S INITIALS	COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)
1. OC-SP		1/20		
2. OC-E		1/21		
3. R&D/EP	1/22			
4. FCS			FCS	ACTION PLS
5. L H/G				
6.				
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STANDARD FORM NO. 64

SECRET

Office Memorandum • UNITED STATES GOVERNMENT

SPM 8-515

TO : Chief, Engineering Division, OC

DATE: 17 January 1958

FROM : Chief, Supplemental Programs Division, OC

SUBJECT: High Gain Broadband Antenna Details

REFERENCE: SPM 7-708

1. Discussions with [redacted] of OC-E/R&D-EP have firmed the following parameters for obtaining an antenna and modifying the feed system to meet the referenced memorandum requirements. We wish to establish the urgency of this particular item as we have a critical delivery date requirement. [redacted] 25X1 25X1 25X1

2. The following factors are the ideal design conditions to assist you in procuring this antenna.

a. Continuously rotatable at the rate of 2 rpm with positioning accuracies within $\pm 1^{\circ}$ (plus one degree).

b. Positioning should be manual activate with power drive.

c. The antenna will be receiving only over the range of 150 mcs to 1000 mcs.

d. Remote rotate controls with an azimuth indicator should be provided for the receiver operator's control.

e. One feed is preferred but should the VSWR greatly exceed the desired 3:1 ratio, multiple feeds should be provided. Feed changes, if necessary, should be a simple operation.

f. Loading conditions should meet MIL specs. applicable to temperature, wind, snow, and ice.

g. Vibration and shock conditions must be considered for a vessel of 100 feet steel fishing--hull construction.

h. The reflector construction is recommended as expanded steel or lighter weight metals if possible. Weight and wind loading would be prime factors for reflector procurement.

i. A parabolid reflector seems most desirable to achieve wide band gains with fixed focal length for feed element settings.

j. A/minimum

SECRET

j. A minimum vertical beam angle of 15° is necessary.

k. The side lobe levels should be at least 6 db below the main center lobe. In considering the front to back ratio, the limits are not defined but should be reasonably good.

l. Beam gain patterns are requested with special attention for that region where the side lobes are significant.

m. Pattern studies at the site will not be considered at this time.

n. Power for the rotator will be 115 volts 60 cycles.

o. 50 ohm coaxial feed lines of 35 feet length will operate into a [redacted] receiver. This receiver can be GFE to the contractor for antenna testing and pattern analysis. 25X1

p. The maximum total weight of both antenna and rotator can be 1000 pounds. This limit will undoubtedly mandate serious consideration for light weight components in the reflector and feed in order to minimize the rotator requirements. The additional requirement for rapid reflector detachment will further emphasize the minimum weight consideration.

q. The cube, weight, and delivery date must be made available as soon as possible for establishing space under sea shipment. Details of the mounting requirements would also be helpful for preparing the footings prior to arrival of the antenna.

3. The operations unit just recently advised us of the urgency for this antenna; consequently, the referenced memorandum did not establish this fact. Rapid action must be taken on this antenna procurement and modification because of the early delivery date and the high priority this Division has given to the project.

25X1

for [redacted]

Distribution:
Original & 1 - Addressee

STANDARD FORM NO. 64 SECRET

Office Memorandum • UNITED STATES GOVERNMENT

SPM 8-544

TO : Chief, Engineering Division, OC DATE: 7 February 1958

FROM : Chief, Supplemental Programs Division, OC

SUBJECT: High Gain Broadband Antenna

REF : SPM 8-515

1. The antenna requirement, outlined in the referenced memorandum, has been discussed with [redacted] OC-E/R&D-EP, who provided details established by verbal discussions with [redacted] It is our understanding, as participants in the various contractor meetings, that [redacted] could not produce this antenna in the desired time. We, therefore, accept the proposal from [redacted] and request that all efforts possible be devoted to establishing a contract for delivering this antenna within ninety days. 25X1 25X1 25X1 25X1 25X1

2. The following design factors are the significant details for this antenna construction:

A. Eight foot diameter paraboloid of circular revolution.

Dipoles 150-300; 300-600 600-1200

B. Three feeds terminating in 50 ohm coax for operation as a receiving antenna from 150 mcs to 1000 mcs.

C. The V.S.W.R. should not exceed 3:1. (2-1)

Rot. feed manually for polarization

D. The maximum gain possible is requested with the side lobes at least 10 db below the main lobe.

E. The best possible front to back ratio. (It was reported to us that [redacted] quoted 20 db front to back ratio with a possible decrease in this figure at the 150 mcs. region.) 25X1

F. The main lobe should meet the following gain/beam width conditions:

150 mcs	8.0 db gain	60.0° approx.
300	15.5 db	27.5°
500	20.0 db	16.5°
750	23.5 db	11.0°
1000	26.0 db	8.4°

... G. The antenna .....

CONFIDENTIAL SECRET

G. The antenna (reflector and feed) must be detachable from the rotator. (Ten minutes is expected time limit.)

H. 100 knot winds and three inch ice conditions are climatic design limits with salt spray corrosion protection.

I. 1000 pounds maximum weight is understood to be realistic for the antenna and rotator.

J. Antenna continuously rotatable at the rate of 2 RPM with positioning accuracies within ±1° (plus or minus one degree.)

K. The positioning should be a manually activated system with power drive. The control assembly should contain the necessary switches for on-off operation, clockwise - counter clockwise rotation, and an azimuth indicator for instantaneous heading indication.

L. Beam gain patterns are requested which will serve as a systems test by using the GFE receiver [redacted] The patterns requested should be at the frequencies listed in para 2F above unless the side lobes become significant. If extensive side lobes exist, we request extensive testing in that region. Also, if possible, a gain curve for the center lobe is requested if the 150 to 1000 mcs band can be swept. 25X1

M. Pattern studies at the site are not required.

N. Power for the rotator will be 115 volts 60 cycles. 115/230 3Ø 250 DC

O. The cube, weight, and exact delivery dates are requested as soon as possible so space for sea shipment can be established.

P. Our most urgent request to assist in expediting this antenna is to have detailed drawings for the rotator footings furnished as soon as possible. In this way preparations for the installation can be started and possibly finished prior to the arrival of the antenna at the operating site.

3. The cost of this work should be charged to allotment number 8-3400-83-909 and for further details please contact [redacted] OC-SP/EA, [redacted] 25X1

25X1

for Acting 25X1

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